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Magnetic resonance force microscopy

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In recent years a new technique for detecting local microwave properties of materials and nanostructures has been developed, which is called “magnetic resonance force microscopy” (MRFM) and combines the advantages of magnetic force microscopy and resonance microwave diagnostics. The main idea of MRFM is the detection of a local power interaction between the magnetic force microscope probe and a sample under microwave pumping. Upon microwave excitation, the magnetic moments of sample electrons and nuclei are changes, which lead to a change in the force acting on the probe from the side of the sample. This method enables recording of local microwave absorption spectra and studying the spatial distributions of the resonant oscillations for the spins of the electrons and nuclei in the sample. In current work we present the review of different application of MRFM for the diagnostics of ferromagnetic resonance (FMR) [1,2], electron spin resonance (ESR) [3,4] and nuclear resonance (NMR) [5,6] in the solid state structures.

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